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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/786,967 | 02/25/2004 | Tuan Van Ngo | TI-36208 | 4108 |

7590 06/29/2005

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| EXAMINER |
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KAPADIA, VARSHA A

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| ART UNIT | PAPER NUMBER |
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2651

DATE MAILED: 06/29/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|-------------------------------|----------------------------|--|
| Office Action Summary | Application No. 10/786,967 | Applicant(s) NGO ET AL. | |
| | Examiner Varsha A. Kapadia | Art Unit 2651 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 February 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) 19 is/are allowed.
- 6) ☒ Claim(s) 1-6, 8-16 and 18 is/are rejected.
- 7) ☒ Claim(s) 7 and 17 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Rejection Under 35 U.S.C. 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-4 and 11-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shier et al (5,287,231) in view of Ramalho et al (6,324,028).

With regards to claims 1 and 11, Shier et al discloses a drive system (see fig.1) for a disk drive (see col.1 lines 9-17), comprising:

A switching circuit...(see fig. 1 elements 6,8,9,11, 19 and disclosure thereof); a write driver circuit couple with the switching circuit for providing current to the switching circuit (see fig.1 element 16 and disclosure thereof); and a pre-drive circuit couple with the drive circuit for providing an amplified signal (see fig.1 element 14 and disclosure thereof).

Shier et al fails to further disclose pre-drive circuit having a pair of voltage follower devices in a cascade arrangement as claimed.

Ramalho et al however discloses such in elements 10a, 10b respective circuit elements and disclosure thereof.

It would have been obvious to one of ordinary skill in the art to modify the write circuit disclosed by Shier et al with the above teachings from Ramalho et al in order to provide write circuit including voltage follower device to enable high frequency performance and to reduce the sensitivity to the performance limitations resulting from head-amplifier combination as taught by Ramalho et al.

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With regards to claims 2-4, and 12-14. Ramalho et al further discloses plurality of transistors operable in Class AB biasing arrangement (see elements 10a, 10b, respective circuit components, disclosure thereof and col.2 lines 46-59, and col.2 lines 2-6). Ramalho is relied upon for the same reasons as described above in this office action.

With regards to claim 9, Shier et al discloses upper and lower pair of the switching devices fig.1 elements 6,8,9, 11, 19 and disclosure thereof).

Claims 5-6, 8, 10, 15,16 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shier et al in view of Ramalho et al as applied to claims 1-4,9, 11-14 above, and further in view of Chiou et al (5,386,328).

With regards to claims 5 and 15 Shier et al in view of Ramalho et al discloses the invention as described above in this office action with respect to claims 1-4 and 9. Shier et al in view of Ramalho et al fails to further disclose the reference circuit coupled to the pre-driver for providing a differential ECL data signals.

However, such is disclosed by Chiou et al on col.4 lines 41-47, fig.4 and disclosure thereof).

It would have been obvious to one of ordinary skill in the art to modify the write circuit disclosed by Shier et al in view of Ramalho et al with the above teachings from Chiou et al in order to provide write circuit including capability of providing ECL data signal to the pre-driver in order to improve the performance characteristics of the write driver as disclosed by Chiou et al.

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With regards o claims 6, 8, 10, 16 and 18, Chiou et al further shows write driver circuit comprises pair of transistors having base, collector and emitter as claimed (see figs. 2-4 and disclosure thereof). Chiou et al is relied upon for the same reasons as described above in this office action.

Allowable Subject Matter

Claims 7 and 17 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claim 19 is allowed.

Claims 7, 17 and 19 differ from the prior art of record by specifically reciting the reference circuit in the driver system comprises a Class AB operable mirror coupled with the transistor emitter for stabilizing the voltage at increased switching speeds.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Varsha A. Kapadia whose telephone number is (571)272-7557. The examiner can normally be reached on Mon Tue and Thurs. from 6:30 AM to 2:00 PM.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Hudspeth can be reached on 571 272 7843. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



VK



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